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GARCH and volatility swaps

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Abstract

This article discusses the valuation and hedging of volatility swaps within the frame of a GARCH(1,1) stochastic volatility model. First we use a general and flexible partial differential equation (PDE) approach to determine the first two moments of the realized variance in a continuous or discrete context. Next, and also the main contribution of the paper, is a closed-form approximate solution for the so-called convexity correction, when the risk-neutral process for the instantaneous variance is a continuous time limit of a GARCH (1,1) model. Following this, we provide a numerical example using S&P 500 data.

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